

SECTION IV—RIVERS AND FLOODS.

RIVERS AND FLOODS OF DECEMBER, 1915.

By ALFRED J. HENRY, Professor in Charge of River and Flood Division.

[Dated: Washington, January 31, 1916.]

Flood-producing rains occurred on two occasions during the month; the first was in connection with general rains that were associated with low No. v, Chart III. The rains were heavy, over 1 inch in 24 hours in Arkansas and northeastern Texas on the 16th; the Ohio Valley, Tennessee, Kentucky, Alabama, and northern Georgia on the 17th, and the Atlantic drainage, including Georgia, on the 18th. The second period of flood-producing rains began on the 27th, in connection with low No. VIII-A, Chart No. III. This low was associated with heavy rains on the 28th in Alabama, Mississippi, eastern Tennessee, and northern and central Georgia. The heavy rains in Tennessee, Alabama, and Georgia continued during part of the 29th and extended into western North Carolina on the same date.

The rains of the first of the above-named periods caused only a slight flood wave in the upper reaches of the Ohio on the 19th. The southern tributaries, however, while not in severe flood, carried much more water than the northern and, as a result, flood stages were reached at Evansville, Ind., on the 20th, several days before the influence of the minor flood wave from the upper river could be felt.

Evidently the lower river was maintained in flood as a result of the water contributed by the Cumberland and Tennessee Rivers during the closing days of the month. Tables 1 and 2 show points along the Ohio and its tributaries at which the rivers reached and passed the flood stage during December.

The second period of heavy rains caused flood stages in the rivers of the East Gulf and South Atlantic States, as shown in detail in Table 3. The previous rains caused high water in general but flood stages at only a very few points. The month closed with high water in practically all of the streams in the South Atlantic and East Gulf States.

Table 4 shows the flood stages reached in the rivers in other parts of the country. As may be seen, these were of little importance and there was an absence of severe floods outside of the lower Ohio Valley, the East Gulf, and the South Atlantic States.

TABLE 1.—Floods in the Ohio River, December, 1915.

River.	Station.	Flood stage.	Above flood stage.		Crest.	
			From—	To—	Stage.	Date.
		<i>Feet.</i>			<i>Feet.</i>	
Ohio.....	Pittsburgh, Pa.....	22	19	19	22.6	19
Do.....	Beaver Dam, Pa.....	30	19	19	31.7	19
Do.....	Point Pleasant, W. Va.....	40			39.9	21
Do.....	Cloverport, W. Va.....	40	21	21	42.2	24
Do.....	Evansville, Ind.....	35	20	31	41.1	26
Do.....	Henderson, Ky.....	33	21	31	38.9	25 & 26
Do.....	Mount Vernon, Ind.....	35	21	31	39.8	26
Do.....	Shawneetown, Ill.....	35	22	31	40.3	27 & 28

TABLE 2.—Floods in tributaries of the Ohio, December, 1915.

River.	Station.	Flood stage.	Above flood stage.		Crest.	
			From—	To—	Stage.	Date.
		<i>Feet.</i>			<i>Feet.</i>	
Kiskiminetas.....	Saltsburg, Pa.....	8	18	18	10	18
Monongahela.....	Lock No. 4, Pa.....	31	18	19	33.7	18
Do.....	Greensboro, Pa.....	20	18	19	24.1	18
Do.....	Fairmont, W. Va.....	25	18	18	25	18
Little Kanawha.....	Glenville, W. Va.....	22	18	18	22	18
Do.....	Creston, W. Va.....	20	19	19	20.7	19
Tuscarawas.....	Norris Point, Ohio.....	8	30	31	10.2	31
Scioto.....	Circleville, Ohio.....	6	18	19	6.9	18
Do.....	do.....	6	29	31	9.7	31
Licking.....	Farmers, Ky.....	22	18	19	24.8	19
Do.....	Falmouth, Ky.....	25	17	19	31	18
Kentucky.....	Beattyville, Ky.....	30	17	19	36.5	19
Do.....	High Bridge, Ky.....	30	18	21	34.6	19
Do.....	Frankfort, Ky.....	31	17	22	37.3	19
Cumberland.....	Burnside, Ky.....	50	18	19	54.5	19
Do.....	Carthage, Tenn.....	40	20	20	40.2	20
Do.....	Nashville, Tenn.....	40			39.9	24
Tennessee.....	Knoxville, Tenn.....	12	19	20	17.7	19
Do.....	Chattanooga, Tenn.....	33	20	21	34.4	21
Do.....	Riverton, Ala.....	32	23	26	33.2	25 & 26
Do.....	do.....	32	31	31	32.2	31
Holston.....	Rogersville, Tenn.....	14	19	19	15.2	19
North Fork of Holston.....	Mendota, Va.....	8	18	20	11	18
French Broad.....	Asheville, N. C.....	4	18	20	5.4	18
Do.....	do.....	4	29	31	6.2	29
French Broad.....	Dandridge, Tenn.....	12	18	19	13	19
Do.....	do.....	12	30	30	12.6	30
Nottelucky.....	Birds Bridge, Tenn.....	10	30	30	10.2	30
Big Pigeon.....	Newport, Tenn.....	6	18	18	12	18
Do.....	do.....	6	29	29	10	29
Clinch.....	Clinton, Tenn.....	25	19	20	29.7	19

TABLE 3.—Floods in southern rivers, December, 1915.

River.	Station.	Flood stage.	Above flood stage.		Crest.	
			From—	To—	Stage.	Date.
		<i>Feet.</i>			<i>Feet.</i>	
Alabama.....	Montgomery, Ala.....	35	30	31	41.5	31
Tallahassee.....	Milstead, Ala.....	40	29	30	47.2	30
Tombigbee.....	Demopolis, Ala.....	39	30	31	44.2	31
Black Warrior.....	Tuscaloosa, Ala.....	40	29	31	51.6	31
Chattahoochee.....	Norcross, Ga.....	16	19	19	17.8	19
Do.....	West Point, Ga.....	20	30	30	21.4	30
Ocmulgee.....	Macon, Ga.....	18	20	20	22.2	30
Do.....	Abbeville, Ga.....	11	26	28	11.9	27
Broad (in Georgia).....	Carlton, Ga.....	11	18	19	16.7	19
Santee.....	Rimini, S. C.....	12	21	26	13.1	25 & 24
Saluda.....	Chappells, S. C.....	14	31	31	15.0	31
Wateree.....	Camden, S. C.....	23	30	31	28.8	31
Catawba.....	Catawba, S. C.....	11	30	31	14.0	30
Broad (in South Carolina).....	Blair, S. C.....	14	31	31	14.6	31
Roanoke.....	Weldon, N. C.....	30	21	21	30.9	21
Randolph.....	Randolph, Va.....	21	31	31	21.2	31
Black.....	Black Rock, Ark.....	14	17	22	15.9	19
Nueces.....	Cotulla, Tex.....	9.6	29	31	16.5	31
			1	1	9.6	1

TABLE 4.—Floods in other rivers, December, 1915.

River.	Station.	Flood stage.	Above flood stage.		Crest.	
			From—	To—	Stage.	Date.
		<i>Feet.</i>			<i>Feet.</i>	
Hudson.....	Troy, N. Y.....	14	23	29	14.7	28
Willamette.....	Eugene, Oreg.....	10	6	7	13.5	6
Clackamas.....	Cazadero, Oreg.....	8	22	22	14.2	22
Santiam.....	Jefferson, Oreg.....	10	22	22	10.5	22

Hydrographs for typical points on several principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.

SNOWFALL IN HIGH ALTITUDES, DECEMBER, 1915.

[Compiled from reports of section directors.]

Detailed reports on the amount of snowfall both in high altitudes and in the lowlands of Western States will be found in the publication entitled Climatological Data for December, 1915.

In general the snowfall of December in the Pacific Coast and Rocky Mountain States was up to normal; in some localities it slightly exceeded the normal. In the Plateau States of Nevada and Utah the distribution was somewhat irregular; in the last-named a line drawn from the northwest to the southeast corner of the State will separate roughly the regions of light snowfall from those of moderate to heavy snowfall, the latter being in the northeastern part of the State.

In Arizona a general storm at the close of the month left a considerable snow cover in the higher levels of the central and northern counties.

At this date (Jan. 29, 1916), telegraphic advices from Western States show that the snowfall in the mountains of California, Arizona, Nevada, and Utah, and the southwestern portion of Colorado, including northwestern New Mexico, during January, 1916, was exceptionally heavy.

MEAN LAKE LEVELS DURING DECEMBER, 1915.

By UNITED STATES LAKE SURVEY.

[Dated: Detroit, Mich., Jan. 4, 1916.]

The following data are reported in the Notice to Mariners of the above date:

Data.	Lakes.			
	Superior.	Michigan and Huron.	Erie.	Ontario.
Mean level during December, 1915:				
Above mean sea level at New York.....	Feet. 602.72	Feet. 579.51	Feet. 571.37	Feet. 244.78
Above or below—				
Mean stage of November, 1915.....	—0.17	—0.01	—0.09	—0.16
Mean stage of December, 1914.....	+0.63	—0.08	—0.04	—0.05
Average stage for December, last 10 years.....	+0.47	—0.63	—0.36	—0.72
Highest recorded December stage.....	—0.41	—3.01	—2.16	—2.83
Lowest recorded December stage.....	+1.52	+0.51	+0.51	+1.35
Average relation of the December level to—				
November level.....	—0.2	—0.2	—0.1	—0.1
January level.....	+0.3	+0.2	0.0	—0.1